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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,887	10/31/2003	Kwang-Wook Kim	0630-1864P	9001

2292 7590 11/30/2006

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EXAMINER
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KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/697,887

Applicant(s)

KIM ET AL.

Examiner

Ramesh Krishnamurthy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4 - 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 23 is/are allowed.
- 6) ☒ Claim(s) 4 - 7 and 9 - 22 is/are rejected.
- 7) ☒ Claim(s) 21, 22 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

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This office action is responsive to amendment filed 09/06/2006.

**Claims 4 – 24 are pending.**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 4 – 6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 75 13 261.

The document DE '261 (see the translation enclosed) discloses a discharging valve assembly for a reciprocating compressor comprising:

A discharge cover (4) coupled with a front frame (1) (it is noted that the limitation “so as to cover a cylinder in which a piston is inserted” is functional in nature and also the limitation is considered to be inherent to the disclosure of DE '261 as it pertains to a reciprocating compressor);

A discharging valve (2) is inserted in the discharging cover; An unbalancedly and elastically supporting means comprising a spring (3) that is supported on one side by a sloping surface of a sloping (angle of the sloping surface  $\alpha$ ) inner side surface of the discharging cover and its other side being connected to the discharging valve (2). A side of the spring with greater elastic stiffness (page 5 of the translation, lines 5 – 7) is positioned at a sloping surface side (near (5) in Fig. 1) having the nearest distance to the contact surface of the cylinder (near (1)) and the side of the spring with lesser

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elastic stiffness is positioned at a sloping surface having the furthest distance from the contact surface of the cylinder.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 12, 13, 14 – 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 75 13 261.

Regarding claims 3 and 13, it is noted that DE'261 document discloses a sloping surface for the cover, but does not explicitly state the sloping angle other than stating that it is small (page 4, last line – page 5, first line of the translation). The document DE'261 clearly discloses that it is the sloping surface that provides the unbalanced force on the valve member resulting in the low noise operation. To provide a specific angle such as greater than 4 degrees does not alter the functioning principle of the low noise

operation. Thus, the limitation, sloping angle of the sloping surface of the discharging cover is more than four degrees is considered to be a design expedient over those features disclosed in DE'261 in that it neither provides any new and/or unexpected result nor solves any stated problem.

Regarding claim 12, it is noted that providing a sloping surface on the discharging valve as opposed to having it on the cover, is a mere reversal of parts and the courts have generally held that reversal of parts is an expedient that is obvious to one of ordinary skill in the art. *In re Gazda*, 219 F.2d 449, 104 USPQ 400 (CCPA 1955). In the instant case, such a reversal would not change the operation of the DE '261 device since the spring force on the valve member (2) would still remain unbalanced as before and thus the functional equivalence of the two arrangements would allow one of ordinary skill in the art at the time the invention was made to use either arrangement.

6. Claims 7; 9, 11, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 75 13 261 as applied to claims 4 – 6 and 10 above, and further in view of Lee et al. (US 2002/0150488A1).

The document DE '261 discloses the claimed invention with the exception of explicitly disclosing a rotation prevention protrusion disposed on the sloping surface.

Lee et al. discloses (Figs, 11 A, B for example) a protrusion disposed on the inner surface of the cover for the purpose of securing the spring so as to prevent rotation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a protrusion disposed on the inner surface of the cover for the purpose of securing the spring so as to prevent rotation as evident from Lee et al..

Also, in Lee et al., the discharging hole is located on one side of the discharging cover (as recited in claims 9, 18) for the purpose of obtaining a desired flow therethrough since placement of the discharge hole at a specific location on the cover would dictate the flow path from the inlet. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a discharging hole on side of the cover for the purpose of achieving a desired flow therethrough as evident from Lee et al.

Regarding claims 11 and 20, it is noted that the Lee et al. discloses (Figs. 7 – 8B) a conical spring (105) for the purpose of preventing a part of the spring from impacting the next part during compression (Col. 2, paragraph [0024], lines 13 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a conical spring for the purpose of preventing a part of the spring from impacting the next part during compression, as recognized by Lee et al.

7. Claims 8 and 23 are allowed.

8. Claims 21, 22 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed 09/06/2006 have been fully considered but they are not persuasive.

It is noted here, as before, that both the specification and the Figures label the matter therein as 'conventional' which is taken to mean conforming to established practice or accepted standards or customary (Webster's II New Riverside University Dictionary). Additionally, Lee et al. does disclose the discharging hole is formed on one side of the discharging cover, thereby establishing this claimed feature as known in Prior Art.

Applicant's arguments concerning claims 8 and 23 have been rendered moot in view of these claims being deemed allowable, as noted above.

In regard to applicant's arguments concerning the DE'261 reference, it is noted that DE'261 (page 5 of the translation, lines 5 – 7) clearly discloses the two sides of the spring to be tensioned differently which meets the recitation in claims that the valve spring has different elastic stiffness at both sides from its center.

In regard to claim 9, it is noted that in the paragraphs following the paragraph numbered 6, the limitations in claim 9 have been explicitly addressed. To further assist the applicant the relevant paragraph now includes explicit reference to claims 9 and 18.

As regards the applicant's argument concerning the motivation of reversal of parts in regard to providing a sloping valve surface, it is noted that the motivation comes from the recognition of functional equivalence of the two arrangements. As regards claims 15 and 16, it is noted that with a sloped valve surface the spring stiffness is

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different on the two sides of the spring with the surface whose distance from the compression plane of the discharging valve is smaller would have the smaller elastic stiffness and the other side would have the large stiffness.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

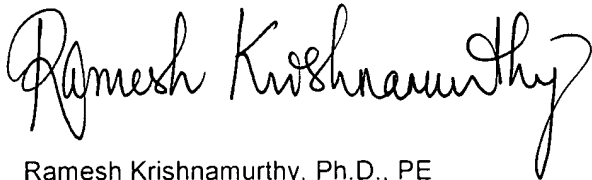
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (571) 272 – 4914. The examiner can normally be reached on Monday - Friday from 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel, can be reached on (571) 272 – 4929. The fax phone number for the organization where this application or proceeding is assigned is (571) 273 – 8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "Ramesh Krishnamurthy". The signature is fluid and cursive, with the first letter of each word being capitalized and prominent.

Ramesh Krishnamurthy, Ph.D., PE  
Primary Examiner  
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